Name: Abby Simons Date: 7/12/10

Lesson Title: Introduction to the Coordinate Plane Unit Title: Week 4

Grade Level: 8th

Objectives:

* Students will be able to state the Pythagorean Theorem
* Students will be able to define the commutative and associative properties
* Students will be able to solve equations by using the simplification properties we discussed.
* Students will be able to reproduce the Coordinate plane
* Students will be able to locate pieces of the Coordinate plane

Set Induction:

* Take attendance
* Hand back any papers
* Ask students to review the distributive property, variables, expressions, and equations.
* (5 min)

Content Outline and Learning Activities:

* We will most likely not cover the mathematical topic of the week today because of time constraints with the rest of the material that needs to be taught this week. If there is extra time today we will spend a moment on talking about the ancient Greeks.
  + the mathematical topic of the week – the Greek mathematician Pythagoras, and his theorem.
    - Pythagoras
      * Lived from about 570 to 490 BCE
      * Spent many years on island of Samos, off of modern day Turkey
      * Not only a mathematician and scientist, but a great philosopher
      * Had a group of followers who taught others what Pythagoras taught them. Led pure lives, wore simple clothing, no shoes.
      * Most known for proving the Pythagorean theorem. Although, two thousand years before the Sumerians thought the theorem was true but Pythagoras was most likely the first to prove it (unknown for sure whether or not he actually proved it)
    - Handout worksheet – The Pythagorean Theorem. Read through the theorem. Then have the students do a visual proof of the theorem – try to make all the pieces fit into the big square.
    - Clean up materials
* We will discuss two other properties that can be used when simplifying equations…the commutative and associative properties of addition.
  + To show the students the commutative property, have two students come up to the front of the classroom. One will stand on the right, and the other will stand on the left. So we know both are there in front of us. What if I switch the order that the students are standing in? will they both still be standing there? Yes! Even though they have a different order, since they are being added together, they are both still there.
  + To show the students the associative property, have there students come up to the front of the classroom. Have two of the students link together (as if they are being added first in parentheses) and have the other students stand a few feet next to them. Now rearange the students by linking the last two and having the first students stand by him/herself. Now ask the students…when I switched the order of the students, did I do anything? No because I still have the same number and same students up there. This is a property of addition. I can switch the link between two of them and it will not affect the final answer.
  + Notes on the commutative and associative properties of addition.
    - Commutative … a + b = b + a
    - Associative … (a + b) + c = a + (b + c)
  + (8 min)
* Hand out worksheet on solving equations and simplifying equations. Students will complete and then we will go over. First simplify the equations using the properties we have discussed, then solve for the unknown variable. Go over with students when everyone completed the worksheet (20 min)
* Go over algebraic expressions with the students. Similar to earlier in the summer when we made expressions from integer word problems. Now we will be using expressions that include a variable.
  + What we are going to do is take word statements and then write algebraic expressions from them.
    - First ask the students why we would want to do this? Because in the real world, problems that we will need to solve will be in words, it is our job to translate them into expressions.
    - Developing this skill will help us to write expressions that will help us solve word problems
    - Algebraic expression – when given words, it is our job to translate those words into a numerical expression. Write this statement on the board. Ask the students what this means. Break statement apart into pieces so that the students can explain each piece of the defintion.
      * Words – so a phrase, group of words that we would see from a word problem, etc
      * Translate – given one things, you want to transform it into a new form. Words to numbers and symbols. Same thing but in two forms (can see the same thing in two different ways). Translation examples – in spanish class you have to translate the spainish into english in order to understand what the teacher is saying.
      * Numerical expression – made up of numbers and operations.
    - An algebraic expression is not a sentence, because it does not have a verb which usually is the equal sign. (algebraic statement has an equal sign)
  + Two examples with the class
    - The number of days in w weeks … answer = 7w
    - The number of entertainment coupon books sold, b, multiplied by the amount per book, $5 … answer = 5b
  + (7 min)

Closure:

* Handout Solving Equations Practice Problems and Equations Homework due 7/13/10
* Review concepts of like terms, and the three properties learned – distributive, associate, and commutative
* (5 min)

Evaluation Procedure:

* Solving Equations Practice Problems and Equations Homework due 7/13/10

Additional Notes:

* Pythagorean Theorem worksheet
* Scissors
* Tape
* Solving Equations and Simplifying Equations worksheet
* Solving Equations and Simplifying Equations worksheet answers
* Solving Equations Practice Problems and Equations Homework
* Solving Equations Practice Problems and Equations Homework Answers

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Solving Equations and Simplifying expressions

Directions: Solve the following problems. Simplify when necessary.

1. 3(y + 4) = 0
2. (4x – 2) + 3x = 5
3. 13y – 24 = 5y
4. 7x = 42
5. 8y + 3 = 57 – y

Name: Answer Key

Date: 7/8/10

Solving Equations and Simplifying expressions

Directions: Solve the following problems. Simplify when necessary.

1. 3(y + 4) = 0

3y + 12 = 0

3y = -12

Y = -4

1. (4x – 2) + 3x = 5

7x -2 = 5

7x = 7

X = 1

1. 13y – 24 = 5y

8y – 24 = 0

8y = 24

Y = 3

1. 7x = 42

X = 6

1. 8y + 3 = 57 – y

9y = 54

Y = 6

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Solving Equations Practice Problems and Equations Homework

Directions: Write an equation. Then solve.

1. Bill purchased 4 pens for $8.00. Find the cost of two pens.
2. A waitress earned $73 for 6 hours of work. The total included $46 in tips. What was her hourly wage?
3. Tehira has read 110 pages of a 290-page book. She reads 20 pages each day. How many days will it take to finish?
4. Sue rode 24 miles on her bike over 4 days. She rode the same amount each day. How many miles did she ride per day?
5. During one week Bob ran a total of 50 miles. On Sunday he ran 8 miles, Monday he ran 5 miles, Tuesday he ran 7 miles, Wednesday he ran 4 miles, Thursday he ran 5 miles, and Friday he ran 3 miles. How many miles did Bob run on Saturday?

Equations

Directions – Identify the property of addition used (either distributive, associative, commutative, or neither)

* 1. 4(3 + r) = 12 + 4r \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  2. 2 + 4x = 4x + 2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  3. 12(w + 2) = 12w + 14 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  4. 3 + (w + c) = (3 + w) + c \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  5. 43 + 13 = 77 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Directions – write an algebraic expression that represents each verbal expression

* 1. The number T times 3 \_\_\_\_\_\_\_\_\_\_\_\_\_\_
  2. 17 less than a number C \_\_\_\_\_\_\_\_\_\_\_\_\_
  3. 15 more than R \_\_\_\_\_\_\_\_\_\_\_\_\_
  4. Jamie buys a carton of eggs every month and gives two eggs to her roommate. Let e be the number of eggs in a carton. Represent the total number of eggs that Jamie has for herself for a 6-month period.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Name: Answer Key

Date: 7/1/10

Solving Equations Practice Problems and Equations Homework

Directions: Write an equation. Then solve.

1. Bill purchased 4 pens for $8.00. Find the cost of two pens.

4x = 8 x = 2

So, 2 pens cost $4.

1. A waitress earned $70 for 6 hours of work. The total included $40 in tips. What was her hourly wage?

$70 = $40 + 6x x = $5.00 per hour

1. Tehira has read 110 pages of a 290-page book. She reads 20 pages each day. How many days will it take to finish?

110 + 20P = 290 P = 9 days

1. Sue rode 24 miles on her bike over 4 days. She rode the same amount each day. How many miles did she ride per day?

24 = 4x x = 6 miles

1. During one week Bob ran a total of 50 miles. On Sunday he ran 8 miles, Monday he ran 5 miles, Tuesday he ran 7 miles, Wednesday he ran 4 miles, Thursday he ran 5 miles, and Friday he ran 3 miles. How many miles did Bob run on Saturday?

50 = 8 + 5 + 7 + 4 + 5 + 3 + x x = 18 miles on Saturday

Directions – Identify the property of addition used (distributive, associative, commutative, or none)

* 1. 4(3 + r) = 12 + 4r distributive

* 1. 2 + 4x = 4x + 2 commutative
  2. 12(w + 2) = 12w + 14 distributive
  3. 3 + (w + c) = (3 + w) + c associative
  4. 43 + 13 = 77 none

Directions – write an algebraic expression that represents each verbal expression

* 1. The number T times 3 3T
  2. 17 less than a number C C – 17
  3. 15 more than R R + 15
  4. Jamie buys a carton of eggs every month and gives two eggs to her roommate. Let e be the number of eggs in a carton. Represent the total number of eggs that Jamie has for herself for a 6-month period.

6(e – 2) = 6e – 12

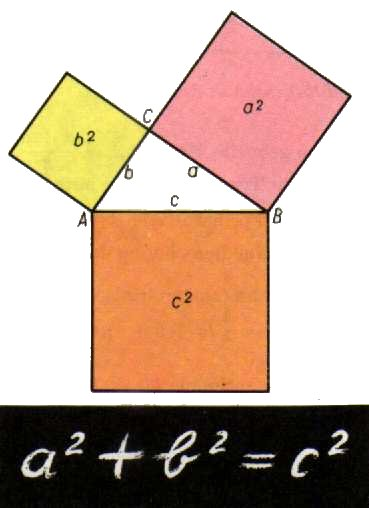
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Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

The Pythagorean Theorem

Pythagorean Theorem – “In right-angled triangles the squares on the side subtending the right angle is equal to the squares on the sides containing the right angle.”

In other words, in a right-triangle, the sum of the squares on the two right-angle sides will be equal to the square on the hypotenuse (longer side).



Name: Abby Simons Date: 7/13/10

Lesson Title: The Coordinate Plane Unit Title: Week 4

Grade Level: 8th

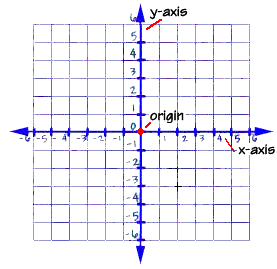
Objectives:

* Students will be able to reproduce the Coordinate plane
* Students will be able to locate the pieces of the Coordinate plane
* Students will be able to locate points on the coordinate plane
* Students will be able to plot points on the coordinate plane demonstrating their knowledge about ordered pairs

Set Induction:

* Take attendance
* Hand back any papers
* Have students write homework for tonight into their homework logs. I will come around and sign it
* We will be starting the coordinate plane. Draw the two intersecting lines on the board. Have the students identify the axes and the origin.
* (3 min)

Content Outline and Learning Activities:

* Students will take out their homework from last night (7/12/10) – solving equations practice problems and equations homework. Go over homework. And when done reviewing collect homework (10 min)
* Introduction to the coordinate plane… students will take notes in notebook. Then use worksheet for coordinate plane notes
  + Rene Descartes
    - French philosopher, mathematician, and scientist
    - Lived 1596 – 1650
    - One of the most influential and important thinkers in history
    - The Cartesian coordinate system was named after him – allowed geometric shapes to be expressed in algebraic expressions
    - The Cartesian plane is also known as the coordinate plane
  + Hand out Cartesian/Coordinate Plane worksheet. Students will fill in notes while I write on the board
  + What is the coordinate/Cartesian plane?
    - First ask the students if they know what it is? Seen it before? – grid used for graphing shapes (that come from equations)
    - Composed of four quadrants and 2 axes.
  + On the board, draw an example Cartesian plane. Students will copy on notes sheet and they will label all the pieces of the coordinate plane
    - The 2 axes are horizontal and vertical number lines that intersect at the origin. Must draw arrows at the ends of the horizontal and vertical number lines because they go off to infinity…keep going like a number line
      * Can locate shapes or points in these regions (based on their coordinates or ordered pair)
      * Make sure they label +x, -x, +y, and –y
      * To create a coordinate plane, start with a sheet of graph or grid paper. Next, draw a horizontal line. This line is called the x-axis and is used to locate values of x. To show that the axis actually goes on forever in both directions, use small arrowheads at each end of the line. Mark off a number line with zero in the center, positive numbers to the right, and negative numbers to the left.
      * Next draw a vertical line that intersects the x axis at zero. This line is called the y-axis and is used to locate the values of y. Mark off a number line with zero in the center, positive numbers going upwards, and negative numbers going downwards. The point where the x and y axes intersect is called the origin. The origin is located at zero on the x axis and zero on the y axis.
    - The four quadrants appear when you draw the number lines on the plane. They are labeled counter-clockwise with Roman Numerals…I, II, III, IV. (STRESS – they must be labeled with Roman numerals, not regular numbers)
    - The horizontal and vertical lines intersect at the origin (0, 0).
  + Where do you see the coordinate plane in the real-world?
    - Ask students
    - Maps – based on coordinate plane. Locating places, streets, etc
    - Battleship the game
  + (15 min)
* Plotting points on the coordinate plane…
  + Students will record notes in their notebooks
  + When you want to find points on the coordinate plane, you need two pieces of information to locate the point. You need to know how far over the point is in the x-direction, and how far up/down the point is in the y-direction (these distances are numbers that can be either positive or negative)
  + From this, you get the ordered pair which looks like (x, y). replace the x, y with the numbers in both of those directions
  + The ordered pair defines where the point lies.
  + The first number in the ordered pair is the x coordinate. It describes the number of units to the left or right of the origin. The second number in the ordered pair is the y coordinate. It describes the number of units above or below the origin. To plot a point, start at the origin and count along the x axis until you reach the x coordinate, count right for positive numbers, left for negative. Then count up or down the number of the y coordinate (up for positive, down for negative.)
  + Remember, we are naming points based off of intersecting lines!
  + Have students first draw a coordinate plane on a sheet of graph paper. Then we will locate points on the grid. Stress importance of x direction first, then y direction. Have students also identify what quadrant they are in
    - (3, 4)
    - (4, 3)
    - (-3, 4)
    - (4, -3)
    - (3, -4)
    - (-4, 3)
    - (-4, -3)
    - (-3, -4)
  + (12 min)

Closure:

* Have students make a generalization about the signs that the points will have in each quadrant
  + I – (+, +)
  + II – (-, +)
  + III – (-, -)
  + IV – (+, -)
  + MAKE SURE TO GET TO THIS. IMPORTANT FOR THE STUDENTS TO RECOGNIZE THIS!
* Hand out homework due 7/14/10 – Introduction to the Cartesian Plane worksheet
* (5 min)

Evaluation Procedure:

* Introduction to the Cartesian Plane homework due 7/14/10

Additional Notes:

* Solving equations practice problems and equations homework from 7/12/10
* Cartesian/Coordinate Plane worksheet
* Cartesian/Coordinate Plane worksheet answers
* Graph paper
* Markers
* Tape
* rulers
* Introduction to the Cartesian Plane worksheet
* Introduction to the Cartesian Plane worksheet answers

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

The Cartesian/Coordinate Plane

What is the Coordinate Plane (also known as the Cartesian plane)?

Draw your own Coordinate Plane and label all the pieces.

Now describe and define the pieces of the Coordinate Plane.

1. Four Quadrants:
2. 2 axes:
   1. One horizontal –
   2. One vertical –
3. Intersection of the 2 axes is called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Name: Answers

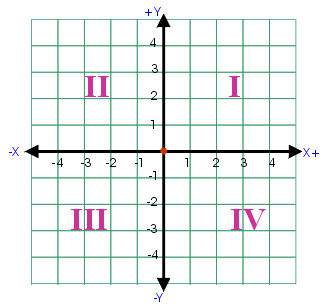
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The Cartesian/Coordinate Plane

What is the Coordinate Plane (also known as the Cartesian plane)?

The Cartesian plane is a grid that is used for graphing shapes (which comes from equations).

Draw your own Coordinate Plane and label all the pieces.



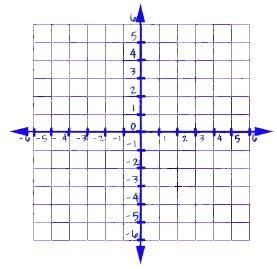
Now describe and define the pieces of the Coordinate Plane.

1. Four Quadrants: appear when draw in the 2 axes. Can locate shapes in these regions
2. 2 axes:
   1. One horizontal – x axis. Both positive and negative pieces – number line
   2. One vertical – y axis. Both positive and negative pieces – number line
3. Intersection of the 2 axes is called the \_origin\_.

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Due Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

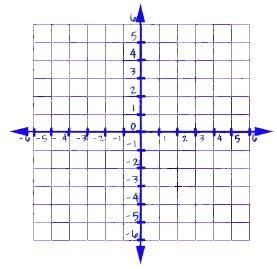
Introduction to the Cartesian Plane

1. Draw a Coordinate plane and label the following:
   1. X-axis (write in the numbers on the axis)
   2. Y-axis (write in the numbers on the axis)
   3. Origin
   4. Each of the four quadrants
2. Label the following points on the Cartesian plane:
   1. (3, 3)
   2. (1, 2)
   3. (-1, 2)
   4. (2, 1)
   5. (-2, -1)
   6. (3, -3)

Name: Answer Key

Due Date: 7/13/10

Introduction to the Cartesian Plane (will write in answers)

1. Draw a Coordinate plane and label the following:
   1. X-axis (write in the numbers on the axis)
   2. Y-axis (write in the numbers on the axis)
   3. Origin
   4. Each of the four quadrants
2. Label the following points on the Cartesian plane:
   1. (3, 3)
   2. (1, 2)
   3. (-1, 2)
   4. (2, 1)
   5. (-2, -1)
   6. (3, -3)

Name: Abby Simons Date: 7/14/10

Lesson Title: Coordinate Plane Unit Title: Week 4

Grade Level: 8th

Objectives:

* Students will be able to demonstrate their knowledge about the coordinate plane by identifying points, axes, and quadrants.
* Students will be able to graph lines through the use of points

Set Induction:

* Take attendance
* Hand back any papers
* Students will take out homework logs and write in tonight’s homework. I will come around and sign it.
* Ask students if they have ever graphed lines (today we will use the points to create lines)
* (5 min)

Content Outline and Learning Activities:

* Review homework from last night – introduction to the Cartesian plane. Collect homework when finished reviewing. (5 min)
* Students will complete a worksheet to sum about the basics of the coordinate plane that we have been working on for the past few days. This will be completed independently. They will hand in the worksheet when completed. (15 min) called – More Coordinate Plane Practice
* Now we will move onto graphing lines using t-tables
  + To introduce the students to the subject of graphing lines (different from what we have been doing..points) put up a big coordinate plane on the smart board and draw a line between certain points. Draw dots at the intersections on the line. Ask students to identify the coordinates on this line.
    - Point – these point lie along the line. A line is composed of many points (at least two – the start and end points). We will use points to locate the placement of the line on the coordinate plane.
  + Students will now create their own lines on the coordinate plane and will record at least 4 points that lie on the line. Give students a handful of M & M’s to plot points. Then record the location of the points. Then, they will draw the line connecting the points on each plane. Worksheet – Graphing Lines on the Coordinate Plane
  + (15 min)

Closure:

* Hand out homework to students due 7/15/10 – Lines on the Coordinate Plane
* Tell students we will be using t-tables tm to graph lines. we will learn another way to locate lines on the coordinate plane by using t-tables and different equations of lines.
* (5 min)

Evaluation Procedure:

* Homework due tm 7/15/10 – Lines on the Coordinate Plane

Additional Notes:

* Introduction to the Cartesian plane homework from 7/13/10
* More Coordinate Plane Practice
* More Coordinate Plane Practice answers
* Graph paper
* Rulers
* Big coordinate plane on smart board to introduce students to graphing lines.
* Graphing Lines on the Coordinate Plane Worksheet
* M & M’s
* Lines on the Coordinate Plane homework
* Lines on the Coordinate Plane homework answer key

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

More Coordinate Plane Practice

Directions: Label the following points on the coordinate plane in the order listed and connect the dots in that order.

First picture: (0,7) to (3,7); (0,6) to (3,6); (1,8) to (1,5); (2,8) to (2,5)

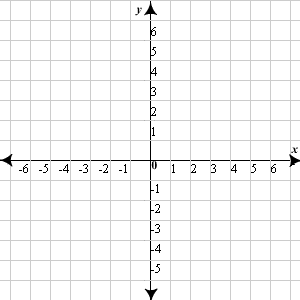
Second picture: (4,6) to (6,8); (6,8) to (6,1); (3,1) to (9,1)



The Picture is \_\_\_\_\_\_\_\_\_\_\_\_\_\_ and in Quadrant \_\_\_\_\_\_

Directions: Complete Questions 1-9.

1. If you are given the coordinates (-5,-3), which quadrant would the point be in?
2. Using the coordinates from question 1, in what directions would you move the point away from the origin? [hint: left or right, up or down]
3. If you are given the coordinates (2,-8), which quadrant would the point be in?
4. Using the coordinates from question 3, in what directions would you move the point away from the origin?
5. What are the signs of the coordinates in Quadrant I? [hint: think positive and negative]
6. What are the signs of the coordinates in Quadrant IV?
7. Is the coordinate (-2,3) the same as coordinate (3,-2)? If no, explain.
8. Is the coordinate (2,3) the same coordinate as (3,2)? If no, explain.
9. Plot the following points on a Coordinate Plane: (-3,-3), (1,1) and (4,4). After you plot these points, connect the dots. What do you create by connecting the points?



Name: Answer Key

Date: 7/14/10

More Coordinate Plane Practice (**write in answers**)

Directions: Label the following points on the coordinate plane in the order listed and connect the dots in that order.

First picture: (0,7) to (3,7); (0,6) to (3,6); (1,8) to (1,5); (2,8) to (2,5)

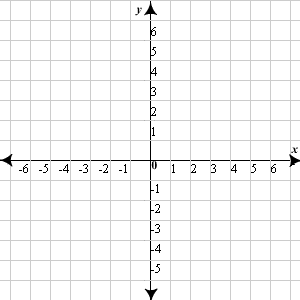
Second picture: (4,6) to (6,8); (6,8) to (6,1); (3,1) to (9,1)



The Picture is \_\_\_\_\_\_\_\_\_\_\_\_\_\_ and in Quadrant \_\_\_\_\_\_

Directions: Complete Questions 1-9.

1. If you are given the coordinates (-5,-3), which quadrant would the point be in?
2. Using the coordinates from question 1, in what directions would you move the point away from the origin? [hint: left or right, up or down]
3. If you are given the coordinates (2,-8), which quadrant would the point be in?
4. Using the coordinates from question 3, in what directions would you move the point away from the origin?
5. What are the signs of the coordinates in Quadrant I? [hint: think positive and negative]
6. What are the signs of the coordinates in Quadrant IV?
7. Is the coordinate (-2,3) the same as coordinate (3,-2)? If no, explain.
8. Is the coordinate (2,3) the same coordinate as (3,2)? If no, explain.
9. Plot the following points on a Coordinate Plane: (-3,-3), (1,1) and (4,4). After you plot these points, connect the dots. What do you create by connecting the points?



Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Graphing Lines on the Coordinate Plane

Directions: Use the M & M’s to locate points (at least 4) on each coordinate plane. Make sure that you can draw a straight line in between the points. Record the locations of each point under each of the coordinate plane. Then draw the line that connects the points.





Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Due Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Lines on the Coordinate Plane Homework

1. Draw a coordinate plane. Then trace out your initials in the blocks on the plane. Identify 5 points from each letter. Record the ordered pairs below your coordinate plane.
2. Label and connect the following points on the coordinate plane.
   1. Connect (1, 2) and (-1, -3)
   2. Connect (1, 2), and (2, -3)
   3. Connect (2, -3) and (-2, 1)
   4. Connect (-2, 1) and (4, 1)
   5. Connect (4, 1) and (-1, -3)

Name: Answer key

Due Date: 7/15/10

Lines on the Coordinate Plane Homework (**write in answers**)

1. Draw a coordinate plane. Then trace out your initials in the blocks on the plane. Identify 5 points from each letter. Record the ordered pairs below your coordinate plane.

Will be based on students initials will check each answer.

1. Label and connect the following points on the coordinate plane.
   1. Connect (1, 2) and (-1, -3)
   2. Connect (1, 2), and (2, -3)
   3. Connect (2, -3) and (-2, 1)
   4. Connect (-2, 1) and (4, 1)
   5. Connect (4, 1) and (-1, -3)



Name: Abby Simons Date: 7/15/10

Lesson Title: T-tables Unit Title: Week 4

Grade Level: 8th

Objectives:

* Students will be able reproduce t-tables
* Students will be able to solve for points on certain lines by completing t-tables
* Students will be able to identify lines by plotting the points from the t-tables

Set Induction:

* Take attendance
* Hand back any papers
* Have students write tonight’s homework into their homework logs. I will come around and sign it
* Show students y= mx + b equation (called slope intercept form – learn more about this next week). Ask if they have ever seen this? We will draw lines using these equations and t-tables
* (5 min)

Content Outline and Learning Activities:

* First we will go over homework from last night (7/14/10) – Lines on the Coordinate Plane. I will collect when finished reviewing. (5 min)
* Now onto equations and t-tables
  + Today we will use an equation to find the points on the lines – yesterday we plotted points and then connected them to create a line.
  + Use the numbers for the variables to find the points. Can find any point on the line if we know the equation of the line.
  + Using our knowledge about substitution. Given a specific value, evaluate an equation. (our process here when finding points that will lie on the lines given to us)
  + Example 1
    - y = 3x + 2
      * if my x coordinate is 1, what is my y coordinate? (students will substitute 1 for x and solve for the value of y)
      * what if my x coordinate is 2, what is y?
      * if x coordinate is 3, what is y?
      * and if x coordinate is 5, what is y?
      * then, on board graph the points and connect them (like we did yesterday) to create a line
      * what we are doing here – finding the coordinates of the points instead of me giving them to you.
    - y = -4x – 2
      * same procedure as above…
    - y = 2x + 1
      * if my y coordinate is 3, what is x?
      * if my y coordinate is 9, what is x?
      * and if my y coordinate is 5, what is x?
      * then plot again..
      * this will reiterate solving for variable skills
  + (10 min)
* Show students what a t-table is…. Leave blank…. You would use a t-table when given an equation and want to find the coordinates of the points on the line. (teacher can give either the x values or y values to make you solve for the other)
  + Y = mx + b equation
  + T-Table

|  |  |
| --- | --- |
| X | Y |
| (values) | (values) |
|  |  |
|  |  |
|  |  |

* + (5 min)
* Handout worksheet – T-table practice
  + Do the first two problems together on board to make sure students know how to fill out a t-table
  + Students will complete the rest of the worksheet
  + (10 min)
* we will play a coordinate game. I will draw the coordinate plane on the board. I will think of a picture (letter L). students will have to get at least 3 points that will be in a L shape. Shape can be in any quadrant. They must state the coordinates in the right order. This would be a little review from earlier this week. (5 min)

Closure:

* Hand out T-Table homework due 7/16/10. Remind students that we will be in gym and be having math 4th period tm.
* Recap the topics we discussed this week in regards to the coordinate plane. Explain activity that we will be doing 4th period tm in the gym. Students must use the topics discussed this week during the activity.
* (5 min)

Evaluation Procedure:

* T-table homework due tm 7/16/10

Additional Notes:

* Lines on Coordinate Plane Homework from 7/14/10
* T-Table practice and graph paper
* T-Table practice answers
* T-Table Homework and GRAPH PAPER
* T-Table Homework answers

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

T-table practice

Directions: fill in t-tables to find the coordinates of each equation. After you have completed the tables, draw one coordinate plane with all the lines and label them on the graph paper!

1. y = 3x – 2

|  |  |
| --- | --- |
| X | Y |
| -3 |  |
| 0 |  |
| 2 |  |
| 5 |  |

1. y = -2x + 4

|  |  |
| --- | --- |
| X | Y |
| -1 |  |
| 0 |  |
| 3 |  |
| 4 |  |

1. y = 6x – 1

|  |  |
| --- | --- |
| X | Y |
|  | -7 |
|  | 5 |
|  | 11 |
|  | 17 |

1. y = -5x + 3

|  |  |
| --- | --- |
| X | Y |
|  | -17 |
|  | -2 |
|  | 3 |
|  | 13 |

Name: Answer Key

Date: 7/15/10

T-table practice

Directions: fill in t-tables to find the coordinates of each equation. After you have completed the tables, draw one coordinate plane with all the lines and label them on the graph paper!

1. y = 3x – 2

|  |  |
| --- | --- |
| X | Y |
| -3 | -11 |
| 0 | -2 |
| 2 | 4 |
| 5 | 13 |

1. y = -2x + 4

|  |  |
| --- | --- |
| X | Y |
| -1 | 6 |
| 0 | 4 |
| 3 | -2 |
| 4 | -4 |

1. y = 6x – 1

|  |  |
| --- | --- |
| X | Y |
| -1 | -7 |
| 1 | 5 |
| 2 | 11 |
| 3 | 17 |

1. y = -5x + 3

|  |  |
| --- | --- |
| X | Y |
| 4 | -17 |
| 1 | -2 |
| 0 | 3 |
| -2 | 13 |

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Due Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

T-table Homework

Directions: You will be given 4 equations. First, start by selecting 4 x-values. Then, find what the y-coordinate would be with each x-value. Draw your t-tables (what we demonstrated in class today). When you are done draw a coordinate plane on the graph paper given to you and plot each line and label them.

1. y = -2x + 8
2. y = 4x + 7
3. y = -4x + 2
4. y = 3x + 9

Name: Answer Key

Due Date: 7/16/10

T-table Homework

Directions: You will be given 4 equations. First, start by selecting 4 x-values. Then, find what the y-coordinate would be with each x-value. Draw your t-tables (what we demonstrated in class today). When you are done draw a coordinate plane on the graph paper given to you and plot each line and label them.

1. y = -2x + 8
2. y = 4x + 7
3. y = -4x + 2
4. y = 3x + 9

Note: all answers will depend on each student’s x-coordinates. I will have to check each student’s work based on that.

Name: Math Department Date: 7/16/10

Lesson Title: The Coordinate Plane Activity Unit Title: Week 4

Grade level: 8th

Objectives:

* Students will be able to identify the pieces of the Cartesian plane, axes, origin, points, and will use t-tables to graph lines

Set Induction:

* We will have this during 4th period. Abby, Courtney, and Grace’s classes will be switched to 4th period instead of 3rd. they will go to science 3rd period. Then the teachers will pick up the students at the science classrooms and bring the students over to the gym (this way they will be dismissed right to the cafeteria for lunch)
* Teachers will take attendance and collect homework before the activity
* (7 min)

Content Outline and Learning Activities:

* We will set up two different colored lines in gym on floor as x and y axis.
* Students will be given index cards with numbers (by tens) on them and +x, +y, -x, -y…they will have to label the axes to set up the coordinate plane. Origin will also be one of the points (a big circle)
* Core teams will rotate quadrants to eliminate too much congestion.
* Students will eventually create a picture in each quadrant and once all the points are found, they will stand back and see the picture (CASTLE!)
  + There will be graph paper on walls for each quadrant. The students will stand with the labeled index card points and hold the string that will outline the picture. Students must also draw on the graph paper the points and the shape they are making.
  + Pieces of graph paper will be put together at the end to show the picture (also serves to check to make sure the students are identifying the right points)
* If time allows, students will be grouped into different quadrants and must work together to create a star. Must identify the points that are needed for the image.

Closure:

* Dismissal to lunch and have a good weekend!

Evaluation Procedure:

* N/A

Additional notes:

* Colored tape (2)
* Index cards (one stack with axes labels, other stack with points for the castle)
* String
* Graph paper (Courtney)
* Markers
* Ladder
* Camera/video camera